Qingdao Bright

elixir medical equipment LLC

Vein Illuminator Pro

B300 - User Manual

Thank you for purchasing our product. In order to use the product safely and correctly, please read this product manual and keep it properly for necessary reference.

Statement for revision

This product manual may subject to revision without further notice.

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Revision

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Warnings and Cautions

- This product is only intended for trained and qualified medical personnel. Read the instructions carefully before using the product. Please strictly follow the medical procedures and management of the healthcare organization during usage.
- The product is type-B applied part and IP0X (no waterproof protection). Do not dip any component of the product into liquid. During charging or using, do not spray or drip any liquid on or into the device. For any spray or dripping, power off immediately and stop using the device.
- Please check the power line, adapter and other parts before using, if damaged, please stop using immediately.
- Please check whether the device is locked, prevent dropping or bruising.
- The device has a removable battery inside. For easier and safer application, strictly follow the instructions of this manual in operation, storage, and transportation. Do not use the device in flammable and explosive environment.
- The original Lithium battery, when not use for an extended time, please Charge it before storage. The use and storage life of battery 1 year.
- The projection window may be due to the touch and stagnant, resulting in the projection is not clear or vascular positioning is not accurate. Please according to the specification requirements, regular maintenance, cleaning and calibration of the products please refer to the detailed method of maintenance section.
- The company shall not be liable for any consequence caused by unauthorized disassembly of the device. Users and suppliers of the product are entitled to relevant rules of use and technical services provided by Qingdao bright.
- Please use the company's products accessories. The other companies'

Accessories may damage the equipment.

† Once the life-cycle of the device comes to an end, do not discard it at will. Since the device contains a battery, dispose the battery in a professional mode according to *Technical Policy for Discarded Batteries Pollution Prevention*.

1. Product Information

With the rapid development of science technology and gradual improvement of people's living standards, the rate of obesity also increases daily. Since it is hard to locate and trace veins of the obesity and some infants, venous puncture has become an increasingly challenging area for medical practitioners and brings great pains to the patients during injection or blood-drawing.

Compared with superficial skin, hemoglobin has a stronger absorption of near-infrared light. Based on this principle, Qingdao bright has developed this Vein Illuminator Pro. It can greatly reduce patients' fear of injections and the difficulty of venous puncture for medical personnel in vein injection and blood-drawing.

Vein Illuminator Pro designed and developed upon the mechanism that hemoglobin is strong in absorbing infrared light. Since hemoglobin has stronger absorption of infrared light than superficial skin and other tissues, it is possible to perceive the intensity of infrared light through the CCD. After a series of digital image processing, Vein Illuminator Pro maps the outline of the vein. Then, the projector projects the image on the surface of human skin to restore vascular distribution. In this way, qualified medical personnel can observe the projected vein image and locate the vein for venous puncture.

This product only serves as a reference and assistance in vein locating or training demonstration for medical personnel. It is not the sole mode of vein locating and cannot completely substitute other vein locating modes based on

Reliable medical judgments and sight or touch judgments.

2. Application Scope

The Vein Illuminator Pro is mainly used to observe and locate veins beneath superficial skin, and to assist medical personnel in venous puncture such as injection and blood-drawing.

3. Contraindications

- Do not apply this product for veins inside or around the eyes.
- This product is only effective for identification of veins instead of arteries.
- Do not use the product as a diagnostic device or for any therapeutic purpose.
- Do not use the product if there is any scar, tattoo, birthmark, or hairs on the skin to be pierced for injection or blood-drawing.

4. Product Symbols and Labels

Power button: press the green button and the indicator light turns on, after preheating the projector opens. Shortly press the button to turn off the instrument.

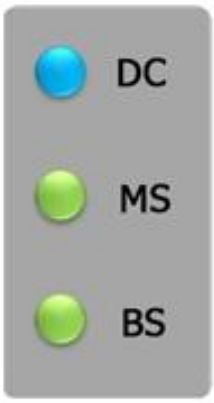
Battery: adopt 6000mAH high performance rechargeable lithium battery, Continuous use time ≤200 minutes.

Power interface: This product is equipped with medical grade 220V-50Hz to 12V DC power adapter.

Note: when the equipment is running host fan will continue to work after the Shutdown of the fan stops working equipment.

5. Mark instructions

LED lights:



DC power supply (green): external DC switch on the lights. MS (green): the machine running state indicating lamp.

BS battery (green): battery status indicator.

Explain：

⌘ The external power supply charge: charge indicating lamp is bright, after charging indicator.

⌘ Battery powered operation: operation indicator slow flash, low battery indicator light flash.

Product label:

Vein Illuminator
Model : B-300
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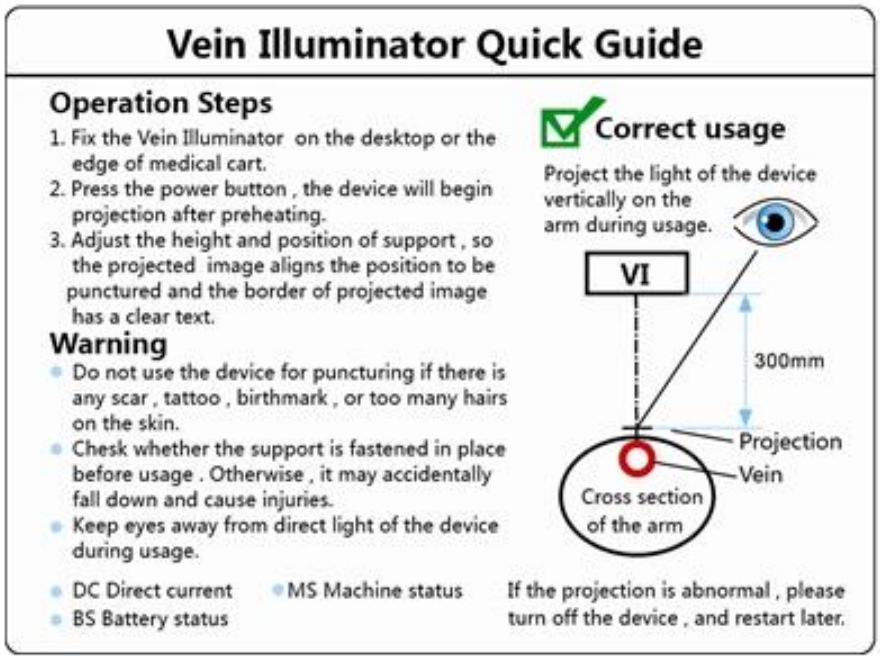
12 V⎓ 25VA
IPX0
2014-11-10

Fast operation guide:


Vein Illuminator Quick Guide
Operation Steps
1. Fix the Vein Illuminator on the desktop or the edge of medical cart.
2. Press the power button , the device will begin projection after preheating.
3. Adjust the height and position of support , so the projected image aligns the position to be punctured and the border of projected image has a clear text.
Warning
Do not use the device for puncturing if there is any scar , tattoo , birthmark , or too many hairs on the skin.
Chesk whether the support is fastened in place before usage . Otherwise , it may accidentally fall down and cause injuries.
Keep eyes away from direct light of the device during usage.
DC Direct current
MS Machine status
BS Battery status
Correct usage
Project the light of the device vertically on the arm during usage.
VI
300mm
Projection
Vein
Cross section of the arm
If the projection is abnormal , please turn off the device , and restart later.

Product Symbols:

Symbol	Description
SN	Serial Number
	Date of Manufacture
	Caution
	Manufacturer
IPX0	No waterproof protection
	Refer to instructions
	DC power (12V)
	Can not be discarded
	Type B applied part (on medical equipment)

6. Unpack and Installation

6.1 Unpack

Item	Qty
Host	1
Power adapter	1
Power cord	1
User manual	1
Precision test card	1
Warranty card	1
Product qualification certificate	1

6.2 Product Structure

The device mainly consists of an infrared emission module, an image sensor, an image processing chip, a projection module, an internal light path module, a portable power module, an outer cover, a power adapter, and a support unit.

The removable battery Description: open the battery chamber, plug battery into the host, and then installed the battery cover.

6.3 Installation of the Support

Please refer to the installation instructions of the corresponding support for details.

6.4 Device Calibration

Every time after assembly or transportation, the device needs to be checked at first start-up. Put the precision test plate on the optimal imaging position and test the offset between the projected image and the original image. When the offset is greater than 1mm, stop using the device and contact the Customer

Service Department directly.

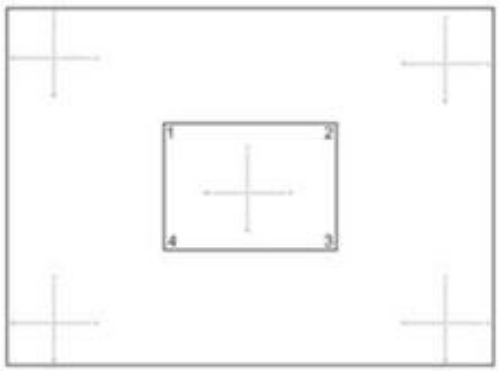


Figure 6-1Appearance of the Precision Test Plate

7. Product operating instructions

7.1 Place the full power device in the holding support. Or connect to the power adapter for charging directly in the DC power supply.

i) Press to the Power button, projection image after preheating.

ii) Adjust the height and angle of the supporting until the skin to be pierced is right 300mm ± 30mm below the host device and the LOGO is displayed clearly. The image of the vein beneath the superficial skin is then projected on the skin. Make a venous puncture according to the projected image (As shown in Figure 7-1).

Figure 7-1

iii) Short press the Mode button, switch to other modes to use. The

Medical staff can puncture, blood and other operation according to the Images of different model results (as shown in Figure 7-2, figure 7-3, figure 7-4).

Notices If use of image Enhance mode, you need to be measured depth vein align with Center Red Cross, after alignment, the side of the vein will display vein depth information. From shallow to deep respectively will light up 1, 2, 3 green light.

iv) Short press the Inverse button, switch to Contrary color to use(as shown in Figure 7-5, figure 7-6).

v) Short press the Size button, switch to another projection region to use. In the small projection region, particularly for infants and young children. (As shown in Figure 7-7, figure 7-8).

Figure 7-2The basic mode

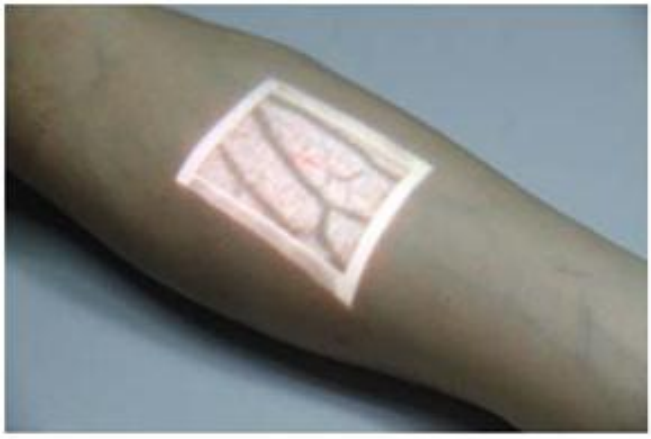


Figure 7-3The enhance mode

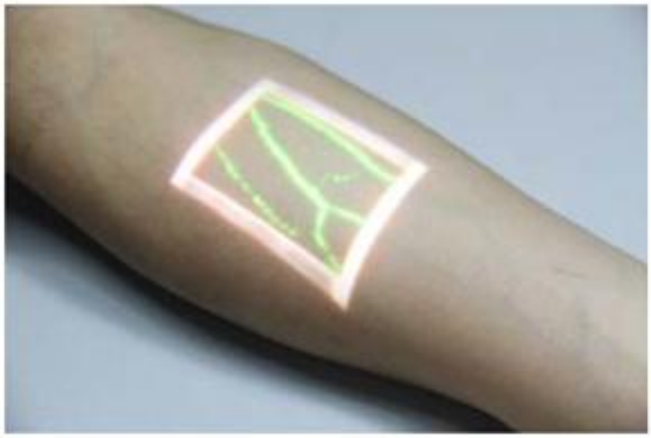


Figure 7-4 The green mode

Figure 7-5The original color

Figure 7-6 The Contrary color

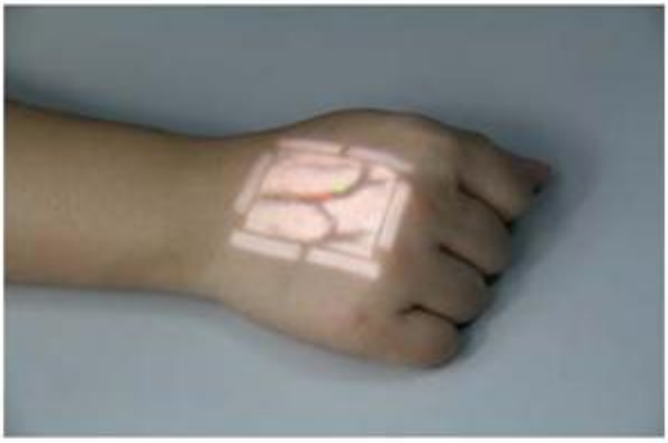


Figure 7-7 The adult region

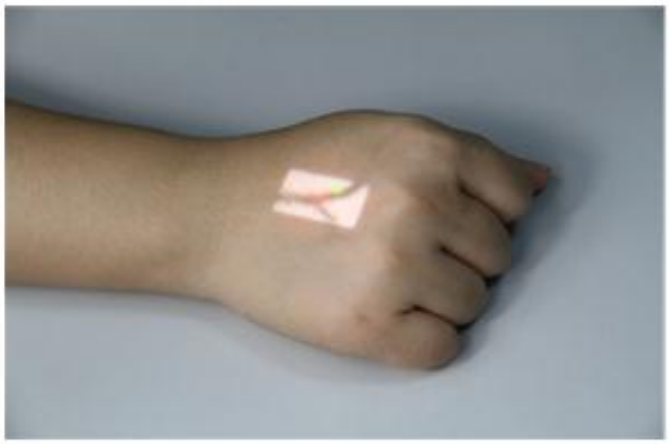


Figure 7-8 The child region

vi) After use, turn off the device. When wanted, to remove the battery to charge which can ensure the battery.

8. Performance and Technical Parameters

Item	Parameter
Type of device	Type-I
Function	Project image of the vein on the superficial skin for display
Power adapter	DC 12V, AC 220V 50Hz
Built-in battery	DC7.4V 6000mAH
Work mode	Continuous operation
Usage property	Non-permanent installation

Technical Parameters

Item	Parameter
Rated power	25VA
Battery-powered working time	≤200mins

Alignment precision	<0.3mm
Image resolution	360*240
Optimal imaging distance	300±30mm
Infrared radiation energy	<200 μ W/㎡
Continuous operating time	>24h

9. Common Faults and Troubleshooting

External faults: External faults are normally caused by improper operation, connection and usage or damaged accessory.

Internal faults: Internal faults are generally caused by the fault of an interior circuit, displacement of a component, or a damaged part. In the event of such fault, please contact us for technical support.

Fault Description	Possible Cause	Treatment
The device is connected to The adapter already, no Image is projected.	the external power has no voltage. The internal Battery is exhausted.	1.inspectionpower adapter is normal. 2. Replace the external Power supply socket.
After the device is Disconnected from the External power, no image is projected.	the internal battery is exhausted or storage environment is too wet	Connect to external power to charge the device.
The image has an obvious spot or is unclear.	the lens of the projector is covered by dust.	Clean the lens by a dry Cloth.

10. Care and maintenance

The device can be operated by qualified and trained medical personnel only after careful reading of this manual. To prolong the service life and ensure stable operation of the device, the user should disinfect, sterilize, clean, inspect, and maintain the device periodically.

Regular cleaning and disinfection of medical staff to cope with Vein Illuminator Pro, clean the host and support to be carried out in the case of power off. Dip a sterilized cloth in soapy water, medicinal alcohol, and 70% Isopropanol or 10%-CL decolorizing dilution and then wipe the host device and

The support bracket by the cloth.

Wipe the window of the device by using optical fibreless lens paper. Drip several drops of absolute ethyl alcohol on the lens paper and then wipe the surface of the window gently in one direction. Dry up the window after cleaning. Before use, verify that there is no spot on the glass.

11. Storage and Transportation

	Conditions	Range
Working	Temperature	0°C ~45°C
	Humidity	≦ 80% RH
Storage	Temperature	-10°C ~55°C
	Humidity	≦ 80% RH
Transportation	Temperature	-10°C ~55°C
	Humidity	≦ 80% RH

THIS SIDE UP FRAGILE KEEP DRY AVOID SUNLIGH

12. Warranty and Limitation of Liability

Warranty

If the user follows the regulations on operation, storage, transportation and maintenance, the company provides warranty for the first year. If the warranty expires, the company charges maintenance or servicing of the product.

Without permission, no person other than the company engineer shall detach the device. Otherwise, it shall not provide free warranty.

Validity: Product life cycle for 5 years.

Disclaimer

Products not intended use or user does not have the qualifications of medical staff and the error to operate the equipment accident situation.

Medical dispute if the customer in the non-normal procedures to third parties or leased to the unqualified medical institutions produced has nothing to do with the company.